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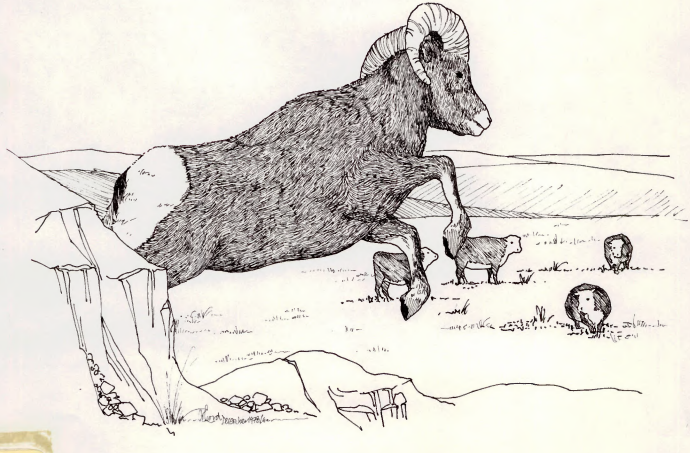

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PROGRESS REPORT: TRICKLE MOUNTAIN RESEARCH STUDY

Contract No. YA-512-CT8-22

May 1, 1978

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This research report is provided from Bureau of Land Management Contract YA-512-CT8-22, Trickle Mountain Forage Allocation Research (San Luis Valley, Colorado).

As semiannual reports are received under the contract they will be forwarded to the field offices for various management applications.

Dr. Allen Cooperrider - BLM Wildlife Research Biologist

Dr. Dale Hoffman - BLM Research Coordinator

Richard M. Kerr - BLM Contracting Officer's Authorized Representative

I. ABSTRACT

This report summarizes work done on the Trickle Mountain Research Study (Contract No. YA-512-CT8-22) from October 25, 1977 through March 31, 1978. Field work was begun in January, 1978 and is continuing. A total of 289 groups of wild ungulates comprising 3,948 individuals have been observed and data on their locations and activity recorded. Ten fecal samples from each wild ungulate have been collected at two-week intervals, and preliminary results indicate that all four species are feeding heavily upon browse species, particularly fringed sage (Artemisia frigida). The latter plant species averages over 40% of the diet of each ungulate species for the first five sampling periods.

II. OBJECTIVES

A. Overall Program Objectives:

To determine use of and competition for forage by livestock, mule deer, elk, antelope and bighorn sheep by habitat types and seasons in the Trickle Mountain Wildlife Habitat Area and to identify opportunities for habitat improvement and management.

B. Specific Study Objectives:

1.) Determine forage use by mule deer, elk, antelope, bighorn sheep and domestic livestock by habitat sites and season in the Trickle Mountain Area. Determine diet overlap and potential for competition. Determine gross forage carrying capacity for all ungulates.

2.) Develop a model that will define alternative forage allocations for big game and livestock from the above data.

3.) Propose potential habitat improvements and management that will produce alternative carrying capacities for big game and livestock simultaneous with ecosystem integrity and environmental quality based on information obtained during the study. These will include, but not be limited to:

a.) vegetative manipulation
b.) controlled burning
c.) fencing
d.) seeding and planting
e.) livestock grazing systems; and
f.) big game harvest, trapping and transplanting

III. PROCEDURES

A. General:

On October 25, Allen Cooperrider, the BLM employee assigned to the project reported to CSU and has been working on the project full time since then. The first two months were spent by him in reviewing literature, and in assisting the Principal Investigator in finalizing details of the study proposal in order to satisfy administrative details necessary for final award of the contract (which occurred on January 17, 1978). Field work was begun by Mr. Cooperrider in January and has been continued at regular intervals since then.

In January, a graduate student, Mr. Scott McCollough, was assigned to the project. He will be pursuing an M.S. degree under Dr. Bailey and has tentatively chosen to concentrate on forage competition between bighorn sheep and cattle for a thesis topic. He will, however, be working on all phases of the project as required and as time allows. He is taking courses and reviewing literature during the spring semester (January through May) and will be working on the project in the field this summer.

In addition, an undergraduate work study student, Mr. Ron Rayburn, has been working approximately 15 hours per week on the project coding data, keypunching, searching literature, and doing other clerical chores.

A technician is currently being recruited to assist with the range inventory work this summer.

In the technical section of the research proposal, the methods are described under three categories: (1) Data Collection, (2) Data Analysis, and (3) Forage Allocation Model. The work to date under each category will be summarized in the following three sections; the methods employed have not been changed or modified significantly.

B. Data Collection:

1.) Habitat Use. Since January 1, approximately 35 days have been spend in the field on the study area, and 289 groups of wild ungulates have been observed. This represents a total of 3,948 individual animals observed over a three-month period. For each observation, data on date, time, location, sex and age classes, and activity has been recorded as well as some weather measurements. Systematic measurements on weather variables could not be made for the entire period because the delay in finalizing the research contract delayed the purchase of weather instruments for use in the field. Forms used for recording these data are shown in Appendix A.

2.) Food Habits. Ten fecal samples have been collected from each of the wild ungulate species for each two week period from January 1 through March 31, 1978. These have been preserved in salt and submitted to the Composition Analysis Laboratory at CSU for analysis.

3.) Forage Production. No data has been gathered to date on forage production, however, preparations have been made for carrying out SVIM type range inventories in the summer. Aerial photos (1974 U.S. Forest Service; 9x9 color prints @ 1:15,840 with stereo coverage) have been located and ordered. Equipment for such surveys is being ordered, and a technician is being hired.

A tentative plant species list has been prepared, indexed to a Flora of Colorado (Harrington, 1954) and punched on cards so that it can be easily and rapidly updated and used in the field (see Appendix B).

4.) Other. Although not required by the contract, field notes on other vertebrates within the Trickle Mountain area are being kept. A preliminary list of mammals and winter birds that have been observed on the area is given in Appendix C.

C. Data Analysis:

1.) Habitat Use. No major analysis of the data on habitat use has been made to date. The data has been punched on cards and a FØRTRAN program to check the cards for errors and to make initial summaries has been written and debugged. The data have all been plotted on topographic maps for visual inspection.

2.) Food Habits. Fecal pellets from five periods have been analyzed in the laboratory. These data have been coded and punched on cards for further statistical analysis.

D. Forage Allocation Model:

Other than designing the model to the extent described in the Technical Proposal of December 1977, no further work has been done on the allocation model, since the major emphasis at this time has been on data collection and analysis. The possibility of using SIMCOMP, a FORTRAN like simulation language developed at CSU for modeling ecological systems, for the allocation model has been investigated. A tentative decision to not use SIMCOMP but rather to develop a model in FORTRAN has been made for the following reasons:

1.) SIMCOMP compilers are only available on a few computers and most BLM users would not have access to such computers.

2.) The characteristics of the language, particularly the limit on the number of state variables (< 1000), make it less useful for the type of simulation proposed.

3.) Many BLM biologists and range conservationists are familiar with FORTRAN and would be able with some assistance to understand and modify for their own use a FORTRAN model without having to learn the mechanics of another simulation language.

The decision is tentative at this point, however, and any feedback from BLM personnel would be appreciated.

IV. RESULTS AND DISCUSSION

Preliminary results are available on winter distribution and food habits of the four wild ungulates and will be reported and discussed below.

A. Winter Distribution:

The number of observations by species and period are shown in Table 1. This includes both animals observed on the ground and those observed during one aerial survey flight taken on 9 March 1978. The flight did not reveal any substantial concentrations of animals that had not been observed from the ground. In general, the distribution conforms well to the winter distribution maps shown in the Draft Trickle Mountain Habitat Management Plan.

Bighorn Sheep. The distribution of sheep was heavily influenced by the presence of the Colorado Division of Wildlife's feeding station along Saguache Creek north of the Dabney Ranch. From 50 to 75 sheep could be observed there daily from January through mid-March when the feeding was terminated in that area.

In addition to the Trickle Mountain area, large numbers of sheep wintered in the area from Middle Creek to Dry Gulch. As the access in the area is not as good, fewer observations were made in this area. However, we estimate that up to half of the sheep population is wintering east of Middle Creek. For this reason the BLM might want to expand the vegetation sampling work to include the BLM lands east of Middle Creek. This area is also used extensively by deer and elk in winter as well as domestic livestock in summer. There is no reason to believe that these animals are separated from those around Trickle Mountain either behaviorally or due to ecological barriers, or that individuals of all three species do not move back and forth between the areas freely.

Pronghorn Antelope. The greatest concentration of antelope was in the Alkalai Gulch and upper Sheep Creek/Antelope Creek area, particularly in the latter area where approximately forty animals could be regularly seen. Smaller herds were found close to Highway 114 from the Trickle Mountain Road to Findlay Gulch, and from Rabbit Canyon north to East Pass Creek. Pronghorn were found on the benches around Trickle Mountain both at the beginning and end of the period (early January and late March) but avoided the area during February when snow depths were greater (>30 cm.).

Mule Deer. Mule deer were found throughout the area except in areas without any tree cover, such as Sheep and Antelope Creek. Concentrations were noted along Middle Creek and on the North side of Trickle Mountain.

Elk. Elk were observed almost exclusively in areas within a few hundred meters of heavy timber, with concentration areas north of Trickle Mountain, north of Upper Saguache Guard Station and in North Park. However, observation of fecal remains suggested that they do use more open habitats such as along Sheep Creek at night. Collins and Urness (1978) presented a paper at the Elk Ecology Symposium that suggested that elk defecate more when moving than when feeding or standing. Thus, these open areas may be used more as travel routes than for feeding. Very few elk were seen or observed within 1 km of Highway 114.

B. Food Habits:

A summary of the food habits data available to date (Table 2) shows that all four species are relying heavily on browse during winter. Preliminary summaries of the raw data (Appendix D) indicate that fringed sage (Artemisia frigida) is the single most important species in the diet, making up more than 40% of the diet in most cases. Other important species being utilized are four-wing Saltbush (Atriplex canescens), winterfat (Eurotia lanata), rubber rabbitbrush (Chrysothamnus nauseosus), Yucca (Yucca spp.), Douglas Fir (Pseudotsuga menzesii), junipers (Juniperus spp.), and pines (Pinus spp.).

In recent years various investigators have looked at the technique microhistological analysis of feces as an estimater of diet developed analysis by Dr. Hansen and questioned some of the assumptions inherent in such analyses. This has been done most recently by Pulliam (1978). On the other hand, there is a large body of literature that support the contention that it is useful, reliable, and accurate technique within limits imposed by technician error or ability, minor differences in digestibility of plant fragments, and statistical uncertainty. It is important to know what such limits are, however, in order to judge how much reliance should be made on data derived from use of such technique. To assist in this effort Mr. McCollough is preparing a literature review of the technique.

For the discussion that follows it is assumed that the percent relative density of plant fragments discerned in fecal samples is highly correlated with the percent in the diet. Our observations in the field have verified in a qualitative way the results from fecal analysis e.g. heavy use of fringed sage by all four ungulates has been observed in the field by direct observation and by examination of feeding sites.

Bighorn Sheep. Bighorn sheep are feeding heavily upon winterfat four-wing salt bush, and yucca in addition to fringed sage. These four species comprise 60-70% of the winter diet. The rest of the diet consists of browse species eaten in small quantities and grass species which make up about 20% of the diet. These figures are very close to what Todd (1975) reported for Trickle Mountain bighorn the winter of 1971-72. Using similar techniques he found sheep eating 60% fringed sage, 7% other browse species, 23% grasses and sedges, and 8% yucca which he listed as a forb.

Pronghorn Antelope. The pronghorn are feeding heavily upon four-wing saltbush and rubber rabbitbush, in addition to fringed sage. These species make up 80 to 90% of the diet. In most cases antelope are eating very little grass.

Mule Deer. Deer are feeding heavily upon the conifer species particularly juniper and douglas fir in addition to fourwing saltbush and fringed sage. The percentage of grass in the diet is consistently low.

Elk. Elk appear to be more versatile in their food habits consuming up to 39% grass at times, and utilizing a wider variety of browse species. Fringed sage, however, is a major component of their diet, averaging 51% of the diet for the 10 week period.

V. LITERATURE CITED:

Collins, W. B. and P. Urness. 1978. Elk pellet group distributions and rates of deposition in aspen and lodgepole pine habitats. Paper presented at symposium on Elk Ecology and Management, April 3-5, 1978. Laramie, Wyo.

Harrington, H. D. 1954. Manual of the plants of Colorado. Sage Books, Denver. 666pp.

Pulliam, D. E. 1978. Determination of digestibility coefficients for quantification of fecal analysis with elk. Paper presented at Symposium on Elk Ecology and Management, April 3-5, 1978. Laramie, Wyo.

Shepherd, R. 1970. Vegetation of two dissimilar bighorn sheep ranges in Colorado. Colo. Div. Wildl., Div. Rept. No. 4, 223 pp.

Todd, J. W. 1975. Foods of Rocky Mountain sheep in southern Colorado. J. Wildl. Manage. 39(1):108-111.

TABLE 1. Summary of Winter Observations of Ungulates in Trickle Mountain Wildlife Habitat Area during 1978.

	No. Groups Observed	No. Animals Observed	Mean Group Size
Period 1. Jan. 1-14, 1978			
Bighorn Sheep	3	33	10
Antelope	4	77	19
Mule Deer	10	43	4
Elk	2	158	79
Period 2. Jan. 15-28, 1978			
Bighorn Sheep	6	73	12
Antelope	3	98	33
Mule Deer	9	53	6
Elk	4	169	42
Period 3. Jan. 20-Feb. 11, 1978			
Bighorn Sheep	6	268	45
Antelope	8	157	20
Mule Deer	20	88	4
Elk	10	201	20
Period 4. Feb. 12-25, 1978			
Bighorn Sheep	11	181	16
Antelope	6	145	24
Mule Deer	14	116	8
Elk	6	144	24
Period 5. Feb. 26-Mar. 11, 1978			
Bighorn Sheep	14	290	21
Antelope	20	267	13
Mule Deer	63	613	10
Elk	17	361	21
Period 6. Mar. 12-25, 1978			
Bighorn Sheep	3	27	9
Antelope	8	73	9
Mule Deer	10	86	9
Elk	6	36	6
Period 7. Mar. 25-Apr. 8, 1978			
Bighorn Sheep	4	16	4
Antelope	6	41	7
Mule Deer	11	83	8
Elk	5	51	10
SUMMARY, Periods 1-7 (January 1 - April 8, 1978):			
Bighorn Sheep	47	888	19
Antelope	55	858	16
Mule Deer	137	1082	8
Elk	50	1120	22
TOTAL:	289	3948	

TABLE 2. Percent Relative Density of Plant Fragments Discerned in Fecal Material from Trickle Mountain Ungulates (Winter, 1978).

	PERIODS					
	1/01-1/14	1/15-1/28	1/29-2/11	2/12-2/25	2/26-3/11	
SPECIES	1	2	3	4	5	MEAN
	%	%	%	%	%	%
Bighorn Sheep						
Grass	19	23	14	18	39	23
Browse	79	76	86	82	58	76
Forbs	1	0	0	0	0	>1
Pronghorn Antelope						
Grass	12	1	1	1	0	3
Browse	85	98	99	98	99	96
Forbs	1	0	0	1	0	>1
Mule Deer						
Grass	3	1	2	5	3	3
Browse	96	98	98	94	96	96
Forbs	1	0	0	1	0	>1
Elk						
Grass	32	14	39	14	13	22
Browse	67	84	58	86	86	77
Forbs	1	0	0	0	0	>1

APPENDIX A. Field Observation Forms.

No. ___ of ___
Observer _____

Dates _____

Trickle Mountain Study - Observation Forms

Observation Number	Card No.	Of	Observer No.	Observer Init.	Date No.	Date Day	Date Yr.	Time	Period	Route	Location T	Location R	Location Sec	Location ¼ of ¼	Habitat Type No.	Habitat Type Exp.	Habitat Type Slope	Weather Precip. Begins	Weather Temp	Weather Wind Dir.	Weather Wind Vel.	Weather Cov.	Weather Bar.	Wildlife Spp.	Wildlife Number	Wildlife Sex	Wildlife Age	Wildlife Activity
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80										

DSC 1226-1C (Rev. 1976)

APPENDIX B: Plant Species Expected To Be Found In Trickle Mountain Wildlife Habitat Area (from Shepherd 1975)

FROM HARRINGTON (1954)

				family	genus	species	page
FAMILY-PINACEAE							
JUCOS	3	JUNIPERUS COMMUNIS SAXITILISMT.	COMMON JUNIPER	9	1	1	26
JUSC	3	JUNIPERUS SCOPULORUM	ROCKY MOUNTAIN JUNIPER	9	1	3	26
PIPU	3	BPICEA PUNGENS	COLORADO BLUE SPRUCE	9	4	2	28
PIAR	3	BPINUS ARISTATA	BRISTLECONE PINE	9	2	1	27
PICO	3	BPINUS CONTORTA	LODGEPOLE PINE	9	2	5	27
PIED	3	BPINUS EDULIS	COLORADO PINYON PINE	9	2	3	27
PIFL	3	BPINUS FLEXILIS	LIMBER PINE	9	2	2	27
PIPO	3	BPINUS PONDEROSA	PONDEROSA PINE	9	2	4	27
PSME	3	BPSUEDOTSUGA MENZIESII M.	DOUGLAS FIR	9	5	1	29
FAMILY-GRAMINEAE							
AGSM	1	GAGROPYRON SMITHII	BLUESTEM WHEATGRASS	17	19	9	67
AGSMP	1	GAGROPYRON SMITHII PALMERI	BLUESTEM WHEATGRASS	17	19	9A	67
AGROP	1	GAGROPYRON SPP.	WHEATGRASS	17	19		65
AGSU	1	GAGROPYRON SUBSECUNDUM	BEARDED WHEATGRASS	17	19	2	66
AGTR1	1	GAGROPYRON TRACHYCAULUM	SLENDER WHEATGRASS	17	19	16	68
AGRO2	1	GAGROSTIS SPP.	BENTGRASS	17	37		81
ARFE1	1	GARISTIDA FENDLERIANA	FENDLER THREEAWN	17	50	8	98
ARIS	1	GARISTIDA SPP.	THREEAWN	17	50		96
BLTR	1	GBLEPHARONEURON TRICHOLEPIS	PINE DROPSEED	17	46	1	91
BOGR	1	GBOUTELOUA GRACILIS	BLUE GRAMA	17	59	4	101
BRAN	1	GBROMUS ANOMALUS	NODDING BROME	17	1	16	47
BRCI	1	GBROMUS CILIATUS	FRINGED BROME	17	1	15	4M
BRPU1	1	GBROMUS PUMPELLIANUS	PUMPELLY BROME	17	1	6	45
BROM	1	GBROMUS SPP.	BROME	17	1		44
CAPU1	1	GCALAMAGROSTIS PURPURASCENS	PURPLE PINEGRASS	17	35	1	79
DAPA1	1	GDANTHONIA PARRYI	PARRY DATHONIA	17	34	4	78
DECA	1	GDESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS	17	30	2	76
DIST	1	GDISTICHLIS STRICTA	INLAND SALTGRASS	17	11	1	61
FEAR1	1	GFESTUCA ARIZONICA	ARIZONA FESCUE	17	3	8	49
FEOV	1	GFESTUCA OVINA	SHEEP FESCUE	17	3	7	49
FETH	1	GFESTUCA THURBERI	THURBER FESCUE	17	3	4	49
FEST	1	GFESTUCA SPP.	FESCUE	17	3		48
HOBR	1	GHORDEUM BRACHYANTHERUM	BARLEY	17	25	4	73
ORHY	1	GORYZOPSIS HYMENOIDES	INDIAN RICEGRASS	17	47	1	91
HOJU	1	GHORDEUM JUBATUM	FOXTAIL BARLEY	17	25	3	73
HORD	1	GHORDEUM SPP.	BARLEY	17	25		72
KOCR	1	GKOELERIA CRISTATA	PRAIRIE JUNEGRASS	17	23	1	73
MUFI1	1	GMUHLENBERGIA FILICULMIS	SLIMSTEM MUHLY	17	44	11	87
MUMO1	1	GMUHLENBERGIA MONTANA	MOUNTAIN MUHLY	17	44	10	87
MURI1	1	GMUHLENBERGIA RICHARDSONIS	MAT MUHLY	17	44	17	88
ORMI	1	GORYZOPSIS MICRANTHA	LITTLESEED RICEGRASS	17	47	5	92
PAST	1	GPASPALUM STRAMINEUM	SAND PASPALUM	17	70	3	107
PHPR	1	GPHLEUM PRATENSE	TIMOTHY	17	43	1	85
POCO1	1	GPOA COMPRESSA	CANADA BLUEGRASS	17	7	2	54
POFE	1	GPOA FENDLERIANA	MUTTON BLUEGRASS	17	7	30	58
PONE2	1	GPOA NERVOSA	WHEELER BLUEGRASS	17	7	3	54
POA	1	GPOA SPP.	BLUEGRASS	17	7		52
SIHY	1	GSITANION HYSTRIX	BOTTLEBUSH SQUIRELTAIL	17	24	1	72
SPCR	1	GSPOROBOLUS CRYPTANDRUS	SAND DROPSEED	17	45	9	91
STCO1	1	GSTIPA COMATA INTERMEDIA	TWEEDY NEEDLEGRASS	17	49	4A	94
STSC	1	GSTIPA SCRIBNERI	SCRIBNER NEEDLEGRASS	17	49	9	95
STIP	1	GSTIPA SPP.	NEEDLEGRASS	17	49		93
FAMILY-CYPERACEAE							
CAEL	1	GCAREX ELYNOIDES	ELK SEDGE	18	3	8	125
CAOB	1	GCAREX OBTUSATA	SEDGE	18	3	13	126
CAPR	1	GCAREX PRAEGRACILIS	SEDGE	18	3	54	132
CARE	1	GCAREX SPP.	SEDGE	18	3		118
FAMILY JUMCACEAE							
JUDB	1	GJUNCUS DRUMMONDII	DRUMMOND'S RUSH	23	1	1	147

APPENDIX B (cont.)

FROM HARRINGTON (1954)

			family	genus	species	page
FAMILY-LILIACEAE						
ALCE	2 FALLIUM CERNUUM	NODDING ONION	24	9	1	155
ALLI	2 FALLIUM SPP.	ONION	24	9		155
CAGU	2 FCALOCHORTUS GUNNISONII	GUNNISON MARIPOSA	24	3	2	153
SMST	2 FSMILACINA STELLATA	STARRY SOLOMONPLUME	24	18	2	159
YUCC	3 BYUCCA SPP.	YUCCA	24	1		152
FAMILY-IRIDACEAE						
IRMI	2 FIRIS MISSOURIENSIS	ROCKY MOUNTAIN IRIS	26	1	1	159
FAMILY-SALICACEAF						
POTRI	3 BPOPULUS TREMULOIDES	QUAKING ASPEN	28	1	1	166
FAMILY-POLYGONACEAE						
ERIO1	2 FERIOGONUM SPP.	ERIOGONUM	38	1		185
ERAL	2 FERIOGONUM ALATUM	WING ERIOGONUM	38	1	15	190
FRUM	2 FERIOGONUM UMBELLATUM	SULFUR ERIOGONUM	38	1	23	191
POLU3	2 FPOLYGONUM SPP.	KNOTWEED	38	3		195
RUME	2 FRUMEX SPP.	DOCK	38	6		201
FAMILY-CHENOPODIACEAE						
CHBE	2 FCHENOPODIUM BERLANDIERI	PITSEED GOOSEFOOT	39	13	25	215
CHEN	2 FCHENOPOKIUM SPP.	GOOSEFOOT	39	13		211
SUNT	2 FSUAEDA NIGRA	SEEPWEED	39	12	3	210
ATCA	3 BATRIPLEX CANESCENS	FOURWING SALTBUSH	39	3	1	205
ATRI	3 BATRIPLEX SPP.	SALTBUSH	39	3		204
EULA1	3 BEUROTIA LANATA	COMMON WINTERFAT	39	4	1	208
SAVE2	3 BSARCOBATUS VERMICULATUS V.	BLACK GREASEWOOD	39	2	1	204
FAMILY-PORTULACACEAE						
LEPY	3 BLEWISIA PYGMAEA	LEAST LEWISIA	43	2	3	224
FAMILY-CARYOPHYLLACEAE						
ARFE3	2 FARENAPIA FENDLERI	FENDLER SANDWORT	44	11	13	235
AROB	2 FARENARIA OBTUSTLOBA	ARTIC SANDWORT	44	11	7	234
AREN	2 FARENARIA SPP.	SANDWORT	44	11		233
CERA	2 FCERASTIUM SPP.	CERASTIUM	44	8		270
LUCA1	2 FLUPINUS CAESPITOSUS	DRUMMOND CAMPION	44	4	2	228
PASE	2 FPARONYCHIA SESSILIFLORA	ALPINE NAILWORT	44	5	2	229
STLO2	2 FSTELLARIA LONGIPES LAETA	LONGSTALK STARWORT	44	9	5A	232
STEL	2 FSTELLARIA SPP.	STARWORT	44	9		231
FAMILY-RANUNCULACEAE						
RANU	2 FRANUNCULUS SPP	BUTTERCUP	47	14		245
THAL	2 FTHALICTRUM SPP.	MEADOWRUE	47	10		243
CLPS	3 BCLEMATIS PSEUDOALPINA	ROCKY MT. CLEMATIS	47	8	5	243
FAMILY-BERBERIDACEAE						
BERE	3 BBERBERIS REPENS	CREEPING MAHONIA	48	1	4	252
FAMILY-CRUSIFERAE						
ARDEL	2 FARABIS DEMISSA LANGUIDA	ROCKCREST	52	15	90	273
ARDI2	2 FARABIS DIVARICARPA	SHORTFRUIT ROCKCREST	52	15	5	272
ARAB	2 FARABIS SPP.	ROCKCREST	52	15		270
DEOB	2 FDESCURAINIA OBTUSA	TANSY-MUSTARD	52	17	3	275
DRCR	2 FDRABA CRASSIFOLIA	THICK-LEAVED DRABA	52	11	1	264
FRAS	2 FERYSIMUM ASPEPUM	PLAINS ERYSIMUM	52	18	6	277
FRYS	2 FERYSIMUM SPP.	ERYSIMUM	52	18		276
LEMO2	2 FLEPIDIUM MONTANUM	PEPPERWEED	52	5	4	261
LEMO	2 FLESQUERELLA MONTANA	MOUNTAIN BLADDERPOD	52	14	12	270
THEE	2 FTHLASPI ALPESTRE	PENNYCRESS	52	7	2	262

APPENDIX B (cont.)

FROM HARRINGTON (1954

				family	genus	species	page
FAMILY-SAXIFRACACEAE							
HEPA2	2	FHEUCHERA PARVIFOKIA	LITTLELEAF ALUMROOT	55	12	5	294
RICE	3	BRIBES CEREUM	WAX CURRANT	55	1	10	287
FAMILY-ROSACEAE							
CHNY	2	FCHAMAERHODOS NUTTALLII	NUTTALL CHAMAERHODOS	56	22	1	312
FRVEA	2	FFRAGARIA AMERICANA	WOODLAND STRAWBERRY	56	23	2	312
POAN2	2	FPOTENTILLA ANSERINA	SILVERWEED CINQUEFOIL	56	9	2	302
POCO2	2	FPOTENTILLA CONCINNA	ELEGANT CINQUEFOIL	56	9	18	305
PODI	2	FPOTENTILLA DIVERSIFOLIA	VARILEAF CINQUEFOIL	56	9	17	305
POQU	2	FPOTENTILLA QUINQUEFOLIA	CINQUEFOIL	56	9	13	304
POTE	2	FPOTENTILLA SPP.	CINQUEFOIL	56	9		301
CEMO	3	BCERCOCARPUS MONTANUS	TRUE MT. MAHOCANY	56	7	3	299
HODU	3	BHOLODISCUS DUMOSUS	BUSH ROCKSPIREA	56	14	2	309
POFR1	3	BPOTENTILLA FRUTICOSA	BUSH CINQUEFOIL	56	9	1	302
PRVI	3	BPRUNUS VIRGINIANA	COMMON CHOKECHERRY	56	11	1	308
ROWO	3	BROSA WOODSII	WOODS ROSE	56	8	3	300
RUST	3	BRUBUS STRICOSUS	AMERICAN RED RASPBERRY	56	10	1	307
FAMILY-LEGUMINOSAE							
ASAL2	2	FASTRAGALUS ALPINUS	ALPINE MILKVETCH	57	29	21	341
ASTR	2	FASTRAGALUS SPP.	MILKVETCH	57	29		336
LUARI	2	FLUPINUS ARGENTEUS	SILVERY LUPINE	57	13	10	322
OXLA	2	FOXYTROPIS LAMBERTII	LAMBERT CRAZYWEED	57	28	8	335
OXYT	2	FOXYTROPIS SPP.	CRAZYWEED	57	28		334
OXSE	2	FOXYTROPIS SERICEA	SILKY CRAZYWEED	57	28	10	335
THDI	2	FTHERMOPSIS DIVARICARPA	SPREADING THERMOPSIS	57	11	3	320
TRDA	2	FTRIFOLIUM DASYPHYLLUM	WHIPROOT CLOVER	57	23	4	330
TRIF	2	FTRIFOLIUM SPP.	CLOVER	57	23		329
FAMILY-GERANIACEAE							
CFFR	2	FGERANIUM FREMONTII	FREMOLNT GERANIUM	58	2	4	352
CEPL	2	FGERANIUM PLEBEIA	GERANIUM	58	2		352
FAMILY-EUPHORBIACEAE							
EUPH	2	FEUPHORBIA SPP.	EUPHORBIA	66	2		358
FAMILY-ANACARDIACEAE							
BHTR	3	BRHUS TRILOBATA	SKUNKBUSH SUMAC	68	1	2	364
FAMILY-RHAMNACEAE							
CEFE	3	BCEANOTHUS FENDLERI	FENDLER CEANOTHUS	72	1	1	367
FAMILY-MALVACEAE							
SINE	2	FSIDALCEA NEOMEXICANA	NEW MEX. CHECKERMALLOW	74	4	2	370
SPCO1	2	FSPHAERALCEA COCCINEA	SCARLET GLOBEMALLOW	74	5	2	370
FAMILY-VIOLACEAE							
VIOLA	2	EVIOLA SPP.	VIOLET	79	1		375
FAMILY-LOASACEAE							
MFLA1	2	FMENTZELIA LACINTATA	MENTZELIA	80	1	9	381
FAMILY-CACTACEAE							
ECTR	2	FECHINOCEREUS TRICLOCHIDIATUS	CLARETCUP ECHINOCEREUS	81	3	2	385
MAVI	2	FMAMMILLARIA VIVIPAPA	MAMMILLARIA	81	2	2	384
OPSC	2	FOPUMTIA SCHWERINIANA	PLAINS PRICKLYPEAR	81	1	7	384

APPENDIX B (cont.)

FROM HARRINGTON (1954)

			family	genus	species	page
FAMILY-ELAEAGNACEAE						
SHCA	3 BSHEPHERDIA CANADENSIS	RUSSET BUFFALOBERRY	83	2	1	387
FAMILY-ONAGRACEAE						
EPAN	2 FEPILOBIUM ANGUSTIFOLIUM	COMMON FIREWEED	85	3	1	389
EPMI	2 FEPILOBIUM MINUTUM	WILLOWWEED	85	3	4	390
EPIL	2 FEPILOBIUM SPP.	WILLOWWEED	85	3		389
OECA1	2 FOENOTHERA CAESPITOSA	TUFTED EVENING PRIMROSE	85	7	8	396
OECO	2 FOENOTHERA CORONOPIFOLIA	EVENING PRIMROSE	85	7	9	396
OENO	2 FOENOTHERA SPP.	EVENING PRIMROSE	85	7		393
FAMILY-UMBELLIFERAE						
PSMO	2 FPSEUDOCYMOPTERUS MONTANUS	YELLOW MOUNTAIN PARSLY	88	26	1	411
CYMO	2 FCYMOPTERUS SPP.	CHIMAYA	88	27		411
ORAL	2 FOREOXIS ALPINA	ALPINE OREOXIS	88	7	2	404
PSTU2	2 FPSEUDOCYMOPTERUS SPP.	PSEUDOCYMOPTERUS	88	26		411
FAMILY-ERICACEAE						
ARUV	3 BARCTOSTAPHYLOS UVA-URSI	BEARBERRY, KINNIKINNICK	90	11	2	420
FAMILY-POLEMONIACEAE						
GIAG	2 FGILIA AGGREGATA	SKYROCKET GILIA	99	7	14	447
LEPU	3 BLEPTODACTYLON PUNGENS	GRANITE GILIA	99	9	3	449
FAMILY-BORAGINACEAE						
CRVI	2 FCRYTANTHAA VIRGATA	CRYPTANTHA	101	15	21	467
LARE	2 FLAPPULA REDOWSKII	LAPPULA STICKWEED	101	4	5	456
LIIN	2 FLITHOSPERMUM INCISUM	GROMWELL	101	14	3	462
LITH2	2 FLITHOSPERMUM SPP.	GROMWELL	101	14		461
MELA	2 FMERTENSIA LANCEOLATA	LANCELEAF BLUEBELLS	101	12	11	461
FAMILY-LABIATAE						
HEDE	2 FHEDEOMA SPP.	FALSE PENNYROYAL	103	5		474
FAMILY-SCROPHURLARIACEAE						
CAIN2	2 FCASTILLESA INTEGRA	WHOLELEAF PAINTEDCUP	105	11	6	507
MIGU	2 FMIMULUS GUTTATUS	COMMON MONKEY FLOWER	105	19	6	512
OPLU	2 FORTHOCARPUS LUTEUS	YELLOW OWLCLOVER	105	12	1	508
PERAT	2 FPENSTEMON BARBATUS TORREYI	TORRY PENSTEMON	105	9	2A	494
PESE	2 FPENSTEMON SECUNDIFLORUS	ONESIDE PENSTEMON	105	9	44	505
PENS	2 FPENSTEMON SPP.	PENSTEMON	105	9		491
PETE	2 FPENSTEMON TEUCPIOIDES	GERMANDER PENSTEMON	105	9	23	500
FAMILY-RUBIACEAE						
GABO	2 FGALIUM BOREALE	NORTHERN BEDSTRAW	109	1	5	516
FAMILY-PLANTAGINACEAE						
PLMA	2 FPLANTAGO MAJOR	RIPPLESEED PLANTAIN	110	1	5	518
FAMILY-CAPRIFOLIACEAE						
SYPA2	3 BSYMPHORICARPOS PALMERI	SNOWBERRY	111	5	11	522
FAMILY-CAMPANUCACEAE						
CAPA	2 FCAMPANULA PARRYI	PERRY BELLFLOWER	114	3	3	153
CARO1	2 FCAMPANULA POTUNDIFOLIA	BLUEBELL	114	3	4	525

APPENDIX B (cont.)

FROM HARRINGTON (1954)

FAMILY-COMPOSITAE				Family	Genus	species	page
ACLA	2	FACHILLEA LANULOSA	WESTERN YARROW	117	17	2	578
AGAU	2	FAGOSERIS AURANTIACA	ORANGE ACOSERIS	117	97	5	638
AGGL	2	FAGOSERIS CLAUCA	PALE AGOSERIS	117	97	1	637
ANPA1	2	FANTENNAPIA PARVIFOLIA	MOUNTAIN PUSSYTOES	117	74	2	622
ARCO2	2	FARNICA CORDIFOLIA	HEARTLEAF CORDIFOLIA	117	65	8	617
ARDRG	2	FARTEMISIA DRACUNCULUS GLAUCA	TARRAGON	117	22	22B	585
ARPA7	2	FARTEMISIA PACIFICA	SAGEBRUSH	117	22	15	584
ASBI3	2	FASTER BIGELOVII	BIGELOW ASTER	117	16	9	573
ASBI3	2	FASTER BIGELOVII	BIGELOW ASTER	117	16	9	573
ASLE3	2	FASTER LEUCANTHEMIFOLIUS	DAISYLEAF ASTER	117	16	6	573
ASRU3	2	FASTER RUBROTINCTUS	ASTER	117	16	7	
ASTE	2	FASTER SSP.	ASTER	117	16		573
CHDOA	2	FCHAENACTIS DOUCLASII ACHILL.	DOUGLAS CHAENACTIS	117	28	4A	589
CIFO	2	FCIRSIUM FOLISOSUM	ELK THISTLE	117	77	12	628
COCA	2	FCONYZA CANADENSIS	HORSEWEED	117	14	3	561
ERCA3	2	FERIGERON CANUS	HOARY FLEABANE	117	15	11	566
ERDI2	2	FERICERON DIVERGENS CINEREOUS	SPREADING FLEABANE	117	15	8	565
ERFL	2	FERIGERON FLATIOR	TALL FLEABANE	117	15	17	567
ERIG	2	FERIGERON SPP.	FLEABANE	117	15		561
ERVE	2	FERIGERON VETENSIS	FLEABANE	117	15	30	569
HASP2	2	FHAPLOPAPUS SPINULOSUS AUST.	IRONPLANT GOLDENWEED	117	12	13	558
HEPA1	2	FHELIANTHELLA PARRYI	PARRY HELIANTHELLA	117	59	4	605
HYRI	2	FHYMENOXYS RICHARDSONII	PINGUE ACTINEA	117	35	5	593
PECA5	2	FPERICOME CAUDATA	TAILLEAF PERICOME	117	29	1	589
SEMU3	2	FSENECIO MUTABILIS	GROUNDSELL	117	64	25	613
SEPL	2	FSENECIO PLATTENSIS	PRAIRIE GROUNDSEL	117	64	34	615
SESO	2	FSENECIO SOLDANELLA	ALPINE SENECIO	117	64	3	611
SESP	2	FSENECIO SPARTIOIDES	BROOM GROUNDSEL	117	64	11	612
SENE	2	FSENECIO SPP.	GROUNDSEL	117	64		608
SEWE	2	FSENECIO WERNERIAEFOLIUS INC.	GROUNDSEL	117	64	38	615
SOMI	2	FSOLIDAGO MISSOURIENSIS	MISSOURI COLDENROD	117	11	10	554
SOLI	2	FSOLIDAGO SPP.	GOLDENROD	117	11		552
STPA3	2	FSTEPHANOMERIA PAUCIFLORA	WIRELETTICE	117	87	3	632
TAOF	2	FTARAXICUM OFFICINALE	COMMON DANDELION	117	98	5	639
TOEX1	2	FTOWNSENDIA SERICEA	STEMLESS TOWNSENDIA	117	13	5	560
ARCA5	3	BARTEMISIA CARUTHII	CARUTH SAGEBRUSH	117	22	25	586
ARFR1	3	BARTEMISIA FRIGIDA	FRINGED SAGEBRUSH	117	22	1	582
ARTR	3	BARTEMISIA TRIDENTATA TRIDEN.	BIG SAGEBRUSH	117	22	9A	583
BRGR	3	BBRICKELLIA GRANDIFLORA	TASSELFLOWER BRICKELIA	117	3	1	543
CHNA	3	BCHRYSOTHAMNUS NAUSEOSUS	RUBBER RABBITBRUSH	117	7	2	547
CHNA5	3	BCHRYSOTHAMNUS N. SPECIOSUS	RUBBER RABBITBRUSH	117	7	28	547
CHPAA	3	BCHRYSOTHAMNUS P. ATTENUATUS	PARRY RABBITBRUSH	117	7	1C	547
CHRY1	3	BCHRYSOTHAMNUS SPP.	RABBITBRUSH	117	7		545
CHVIP	3	BC. VISCIDIFLORUS PUMILUS	LOW DOUGLAS RABBITBRUSH	117	7	7C	548
GUSA	3	BGUTTERREZIA SAROTHRAE	BROOM SNAKEWEED	117	10	2	552
TECA	3	BTETRADYMIA CANESCENS	GRAY HORSEBUSH	117	63	3	608
ERSU	2	FERIGERON SUBTRINERVIS	THREENERVE FLEABANE	117	15	25	568
HYAC	2	FHYMENOXYS ACAULIS ACAULIS	STEMLESS ACTINEA	117	35	1A	592
HEVI	2	FHETEROTHECA VILLOSA	GOLDEN ASTER				

APPENDIX C: Mammal and Bird Species Observed In Trickle Mountain Wildlife Habitat Area

MAMMALS

LAGOMOPHA

- LEPORIDAE
  - COTTONTAIL (SYLVILAGUS NUTTALLII)
  - WHITETAILED JACKRABBIT (LEPUS TOWNSENDII)

RODENTIA

- SCIURIDAE
  - GUNNISONS PRAIRIE DOG (CYNOMYS GUNNISONI)

CARNIVORA

- CANIDAE
  - COYOTE (CAVIS LATRANS)
- FELIDAE
  - BOBCAT (LYNX RUFUS)

ARTIODACTYLA

- BOVIDAE
  - BIGHORN SHEEP (OVIS CANADENSIS)
- CERVIDAE
  - MULE DEER (ODOCOILEUS HEMIONUS)
  - ELK (CERVUS CANADENSIS)
- ANTILOCAPRIDAE
  - PRONGHORN ANTELOPE (ANTILOCAPRA AMERICANA)

BIRDS

ANSERIFORMES

- ANATIDAE
  - MALLARD (ANAS PLATYRHYNCHOS)
  - GREEN WINGED TEAL (ANUS CAROLINENSIS)

FALCONIFORMES

- ACCIPITRIDAE
  - GOSHAWK (ACCIPITER GENTILIS)
  - REDTAILED HAWK (BUTEO JAMAICENSIS)
  - ROUGHLEGGED HAWK (BUTEO LAGOPUS)
  - GOLDEN EAGLE (AQUILA CHRYSAETOS)
  - MARSH HAWK (CIRCUS CYANEUS)
- FALCONIDAE
  - AMERICAN KESTREL (FALCO SPARVERIUS)

CHARADRIIFORMES

- CHARADRIIDAE
  - KILLDEER (OXYECHUS VOCIFERUS)

APPENDIX C (cont.)

COLUMBIFORMES

- COLUMBIDAE
  - MORNING DOVE (ZENAIDURA MACROURA)

PICIFORMES

- PICIDAE
  - REDSHAFTED FLICKER (COLAPTES CAFER)

PASSERIFORMES

- ALAUDIDAE
  - HORNED LARK (EREMOPHILA ALPESTRIS)
- CORVIDAE
  - STELLERS JAY (CYANOCITTA STELLERI)
  - BLACKBILLED MAGPIE (PICA PICA)
  - COMMON RAVEN (CORVUS CORAX)
  - PINYON JAY (GYMNORHINUS GYMNORHINUS)
  - CLARKS NUTCRACKER (NUCIFRAGA COLUMBIANA)
- SITTIDAE
  - PIGMY NUTHATCH (SITTA PIGMAEA)
- TURDIDAE
  - AMERICAN ROBIN (TURDUS MIGRATORIUS)
  - MOUNTAIN BLUEBIRD (SIALIA CURRUCOIDES)
  - TOWNSENDS SOLITAIRE (MYADESTES TOWNSENDI)
- LANIIDAE
  - LOGGER HEAD SHRIKE (LANIUS LUDOVICIANUS)
- ICTERIDAE
  - REDWINGED BLACKBIRD (APELATUS PHOENICEUS)
- FRINGILLIDAE
  - GRAY CROWNED ROSY FINCH (LEUCOSTICTE TERHROCOTIS)
  - RED GROSSBILL (LOKIA CURVIROSTRA)
  - DARKEYED JUNCO (JUNCO OREGANUS)
  - GRAYHEADED JUNCO (JUNCO CANICEPS)
  - TREE SPARROW (SPIZELLA ARROREA)

FOOD HABITS SUMMARY FOR PERIOD JAN. 1-14, 1978
Percent Relative Density of Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn Sheep	Pronghorn Antelope	Mule Deer	Elk
		%	%	%	%
Grass					
Wheatgrass	Agropyron spp.				1
Blue grama	Bouteloua gracilis	2			
Sedge	Carex spp.	3	3	2	
Tufted harigrass	Deschampsia caespitosa				4
Fescue	Festuca spp.	5	1		6
Prairia junegrass	Koeleria cristata	2	2		13
Muchly	Muhlenbergia spp.	4	3		3
Bluegrass	Poa spp.	2	1		2
	Others	1	2	1	3
	TOTAL	19	12	3	32
Browse					
Fringed sagebrush	Artemisia Frigida	56	61	42	41
Saltbush	Atriplex	6	6	23	2
Winterfat	Eurotia lanata	3			8
Mt. Mahogany	Cerocarpus montanus			4	
Common Rabbitbush	Chrysothamnus nauseosus		12	3	
Douglas rabbitbush	C. viscidifloras				
Erigonum	Eriogonum				2
Juniper	Juniperus	3		3	
Pehstemon	Penstemon			2	
Mistletoe	Phoradendron		1		
Pine	Pinus	3	2	10	
Cinue Foil	Potentilla			3	
Fir	Pseudotsuga	2	1	1	4
Yucca	Yucca	2			8
	Others	4	2	5	2
	TOTAL	79	85	96	67
Forbs					
	TOTAL	1	1	1	1

APPENDIX D. Food Habits Data Summarized by Period (January - March, 1978).

FOOD HABITS SUMMARY FOR PERIOD JAN. 15-28, 1978
Percent Relative Density of Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn Sheep %	Pronghorn Antelope %	Mule Deer %	Elk %
Grasses					
Wheatgrass	Agropyron				1
Sedge	Carex				4
Danthonia	Danthonia	3			
Fescue	Festuca	10			5
Prairie junegrass	Koeleria cristada	1			1
Muhly	Muhlenbergia	5			1
Bluegrass	Poa				1
	Others	4	1	1	1
	TOTAL	23	1	1	14
Browse					
Fringed sagebrush	Artemisia Frigida	40	66	51	47
Saltbush	Atriplex	23	7	9	3
Mt. Mahogany	Cercocarpus montanus			1	
Rabbitbrush	Chrysothamnus nauseosus		22	5	2
Juniper	Juniperus			18	
Penstemon	Penstemon				1
Pine	Pinus	3		11	8
Fir	Pseudotsuga				14
Yucca	Yucca	8			7
	Others	2	3	3	2
	TOTAL	76	98	98	84
Forbs					
	TOTAL	--	--	--	--

FOOD HABITS SUMMARY FOR PERIOD JAN. 29 - FEB. 11, 1978
Percent Relative Density on Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn Sheep %	Pronghorn Antelope %	Mule Deer %	Elk %
Grasses					
Wheatgrass	Agropyron				6
Glue grama	Bouteloua gracilia				2
Sedge	Carex	1		2	3
Tufted hairgrass	Deschampsia caespitosa				2
Fescue	Festuca	2			16
Muhly	Muhlenbergia	4			1
Bluegrass	Poa	2			2
Squirrel tail	Sitanion Lystrix				4
Dropseed	Sporobolus	3			2
	Others	2	1		1
	TOTAL	14	1	2	39
Browse					
Fringed sagebrush	Artemisia Frigida	58	56	18	27
Saltbush	Atriplex	3	6	12	5
Winter Fat	Eurotia lanata	18			2
Rabbitbush	Chrysothamnus		35	11	5
Mt. Mahogany	Cercocarpus montanus			5	
Actinea	Hymenoxys		1		
Juniper	Juniperus			19	
Pine	Pinus			7	
Fir	Pseudotsuga			25	7
Yucca	Yucca	4			10
	Others	2	1		2
	TOTAL	85	99	98	58
Forbs					
	TOTAL	--	--	--	--

FOOD HABITS SUMMARY FOR PERIOD FEB. 12-25, 1978
Percent Relative Density on Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn Sheep	Pronghorn Antelope	Mule Deer	Elk
		%	%	%	%
Grasses					
Blue grama	Bouteloua gracilis				2
Sedge	Carex	4		2	4
Fescue	Festuca	8		2	4
Muhly	Muhlenbergia	4			1
Dropseed	Sporobolus				2
	Others	2	1	1	1
	TOTAL	18	1	5	14
Browse					
Fringed sagebrush	Artemisia Frigida	70	62	48	76
Saltbush	Atriplex	4	13	4	
Rabbitbush	Chrysothamnus		18	4	
Geranium	Geranium			1	
Actinea	Hymenoxys			4	
Juniper	Juniperus		1	16	
Cactus	Opuntia		4		
Pine	Pinus				3
Fir	Pseudotsuga	2		12	5
Yucca	Yucca	3			
	Others	3	1	5	2
	TOTAL	82	98	94	86
Forbs					
	TOTAL	--	1	1	--

FOOD HABITS SUMMARY FOR PERIOD FEB. 26 - MAR. 11, 1978
Percent Relative Density on Plant Fragments in Fecal Material

COMMON NAME	SCIENTIFIC NAME	Bighorn Sheep %	Pronghorn Antelope %	Mule Deer %	Elk %
Grasses					
Wheatgrass	Agropyron				1
Blue grams	Bouteloua gracilis	6			
Sedge	Carex	2			
Fescus	Festuca	4		1	3
Muhly	Muhlenbergia	20			4
Ricegrass	Oryzopsis	2			
Bluegrass	Poa	2		1	2
Dropseed	Sporobolus	2			
	Others	1		1	3
	TOTAL	39	0	3	13
Browse					
Fringed sagebrush	Artemisia Frigida	47	81	29	63
Saltbush	Atriplex	3	3	20	
Winter fat	Eurotic lanata			16	
Mt. Mahogany	Cerconarpus montanus			2	
Rabbitbush	Chrysothamnus		14		3
Actinea	Hymenoxys	1		2	
Juniper	Juniperus			9	
Pine	Pinus			2	8
Fir	Pseudotsuga				5
Willow	Salix			13	
Yucca	Yucca	5		1	5
	Others	2	1	2	2
	TOTAL	58	99	96	86
Forbs					
	TOTAL	--	--	--	--

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